AMENDMENTS TO THE CLAIMS

Please amend the claims as follows.

1. (Currently Amended) A method of operating a directory server system comprising:
    a) associating an existing role entry in a tree structure with a first user entry in the tree structure, wherein a directory server interacts with entries in the tree structure, and wherein the existing role entry defines a role and has an associated scope in the tree structure based on the existing role entry's location in the tree structure according to a first predefined rule, said associating comprising attaching the role to the first user entry subject to a first condition comprising a role membership condition and the first user entry belonging to the associated scope;
    b) adding an attribute to the existing role entry having a special attribute name and being associated with an attribute value defining an extra scope in the tree structure for the existing role entry, wherein the attribute value identifies a designated location in the tree structure outside the existing role entry's associated scope, and further wherein the extra scope is based on the designated location according to a second predefined rule; and
    c) attaching the role of the existing role entry to a second user entry subject to a second condition comprising said role membership condition and the second user entry belonging to the extra scope.

2. (Previously Presented) The method of claim 1, wherein the existing role entry is a nested role entry defining at least one other role.

3. (Previously Presented) The method of claim 2, wherein the existing role entry has an attribute defining the at least one other role.

4. (Previously Presented) The method of claim 1, wherein the role membership condition comprises a candidate user entry having an attribute designating the role defined by the existing role entry.

5. (Previously Presented) The method of claim 1, wherein the existing role entry has a role filter condition, and the role membership condition comprises one or more attributes of a candidate user entry meeting the role filter condition.

6. (Original) The method of claim 5, wherein the existing role entry has an attribute designating the role filter condition.

7. (Cancelled)

8. (Cancelled)

9. (Previously Presented) The method of claim 1, wherein the extra scope is defined as a subtree of the designated location.

10. (Currently Amended) The method of claim 1, wherein the first predefined rule comprises defining the existing role entry's associated scope as a subtree of a parent of the existing role entry in the tree structure.

11. (Previously Presented) The method of claim 1, further comprising:
    d) responding to a request of whether a designated user entry has a given role by:
        d1) identifying a corresponding role entry corresponding to the given role;
        d2) determining whether the designated user entry meets the first condition in relation to the corresponding role entry;
        d3) if the designated user entry does not meet the first condition in relation to the corresponding role entry, determining whether the corresponding role entry has extra role data identifying an extra scope; and
        d4) if the corresponding role entry has extra role data, determining whether the designated user entry meets the second condition in relation to the corresponding role entry.

12. (Previously Presented) The method of claim 1, further comprising:
    d) responding to a request for any user entries having a given role by:
        d1) identifying a corresponding role entry corresponding to the given role;
        d2) scanning the tree to identify any user entries meeting the first condition in relation to the corresponding role entry; and

d3) if the corresponding role entry has extra role data identifying an extra scope, scanning the tree to identify any user entries meeting the second condition in relation to the corresponding role entry.

13. (Previously Presented) The method of claim 1, further comprising:

d) responding to a request for roles of a given user entry by:

d1) identifying a candidate role entry;

d2) determining whether the given user entry meets the first condition in relation to the candidate role entry;

d3) if the given user entry does not meet the first condition in relation to the candidate role entry and the candidate role entry has extra role data identifying an extra scope, determining whether the given user entry meets the second condition in relation to the candidate role entry; and

d4) repeating said d1) through said d3) with other candidate role entries until an end condition is met.

14. (Previously Presented) The method of claim 13, wherein the end condition comprises having performed said d1) through said d3) with substantially all the applicable candidate role entries.

15. (Previously Presented) The method of claim 13, wherein the given user entry belongs to a subtree of a top suffix of the tree structure, said d2) is performed for each role entry belonging to the subtree of said top suffix, and said d3) is performed for each role entry belonging to any subtree of any top suffix of the tree structure.

16. (Currently Amended) A directory server system comprising:

a directory server interacting with entries in a tree structure, said tree structure comprising an existing role entry and a first user entry, wherein the existing role entry defines a role and has an associated scope in the tree structure based on the existing role entry's location in the tree structure according to a <u>first</u> predefined rule;

a role mechanism capable of attaching the existing role entry's role to the first user entry subject to a first condition comprising a role membership condition and the first user entry belonging to the associated scope; and

said role mechanism further capable of attaching the existing [[rule]] role entry's role to a second user entry subject to a second condition comprising said role membership condition and the second user entry belonging to an extra scope identified by extra role data of the existing role entry, wherein the extra role data comprise an added attribute having a special attribute name and being associated with an attribute value identifying a designated location in the tree structure outside of the existing role entry's associated scope, and the extra scope is based on the designated location according to a second predefined rule.

17. (Previously Presented) The directory server system of claim 16, wherein the existing role entry is a nested role entry defining at least one other role.

18. (Previously Presented) The directory server system of claim 17, wherein the existing role entry has an attribute defining the at least one other role.

19. (Previously Presented) The directory server system of claim 16, wherein the role membership condition comprises a candidate user entry having an attribute designating the role defined by the existing role entry.

20. (Previously Presented) The directory server system of claim 16, wherein the existing role entry has a role filter condition, and the role membership condition comprises one or more attributes of a candidate user entry meeting the role filter condition.

21. (Original) The directory server system of claim 20, wherein the existing role entry has an attribute designating the role filter condition.

22. (Cancelled)

23. (Cancelled)

24. (Previously Presented) The directory server system of claim 16, wherein the extra scope is defined as a subtree of the designated location.

25. (Currently Amended) The directory server system of claim 16, wherein the first predefined rule comprises defining the existing role entry's associated scope as a subtree of a parent of the existing role entry in the tree structure.

26. (Previously Presented) The directory server system of claim 16, wherein the role mechanism is further capable of responding to a request of whether a designated user entry has a given role by:

i) identifying a corresponding role entry corresponding to the given role;

ii) determining whether the designated user entry meets the first condition in relation to the corresponding role entry;

iii) if the designated user entry does not meet the first condition in relation to the corresponding role entry, determining whether the corresponding role entry has extra role data defining an extra scope; and

iv) if the corresponding role entry has extra role data, determining whether the designated user entry meets the second condition in relation to the corresponding role entry.

27. (Previously Presented) The directory server system of claim 16, wherein the role mechanism is further capable of responding to a request for any user entries having a given role by:

i) identifying a corresponding role entry corresponding to the given role;

ii) scanning the tree to identify any user entries meeting the first condition in relation to the corresponding role entry; and

iii) if the corresponding role entry has extra data identifying an extra scope, scanning the tree to identify any user entries meeting the second condition in relation to the corresponding role entry.

28. (Previously Presented) The directory server system of claim 16, wherein the role mechanism is further capable of responding to a request for roles of a given user entry by:

i) identifying a candidate role entry;

ii) determining whether the given user entry meets the first condition in relation to the candidate role entry;

iii) if the given user entry does not meet the first condition in relation to the candidate role entry and the determined role entry has extra data identifying an extra scope,

determining whether the given user entry meets the second condition in relation to the candidate role entry; and

iv) repeating said i) through said iii) with other candidate roles entries until an end condition is met.

29. (Previously Presented) The directory server system of claim 28, wherein the end condition comprises having performed said i) through said iii) with substantially all the applicable candidate role entries.

30. (Previously Presented) The directory server system of claim 28, wherein the given user entry belongs to a subtree of a top suffix of the tree structure, said ii) is performed for each role entry belonging to the subtree of said top suffix, and said iii) is performed for each role entry belonging to any subtree of any top suffix of the tree structure.

31. (Currently Amended) A computer readable medium having stored thereon instructions for:

a) associating an existing role entry in a tree structure with a first user entry in the tree structure, wherein a directory server interacts with entries in the tree structure, and wherein the existing role entry defines a role and has an associated scope in the tree structure based on the existing role entry's location in the tree structure according to a first predefined rule, said associating comprising attaching the role to the first user entry subject to a first condition comprising a role membership condition and the first user entry belonging to the associated scope;

b) adding an attribute to the existing role entry having a special attribute name and being associated with an attribute value defining an extra scope in the tree structure for the existing role entry, wherein the attribute value identifies a designated location in the tree structure outside the existing role entry's associated scope, and further wherein the extra scope is based on the designated location according to a second predefined rule; and

c) attaching the role of the existing role entry to a second user entry subject to a second condition comprising said role membership condition and the second user entry belonging to the extra scope.

32. (Previously Presented) The computer readable medium of claim 31, wherein the existing role entry is a nested role entry defining at least one other role.

33. (Previously Presented) The computer readable medium of claim 32, wherein the existing role entry has an attribute defining the at least one other role.

34. (Previously Presented) The computer readable medium of claim 31, wherein the role membership condition comprises a candidate user entry having an attribute designating the role defined by the existing role entry.

35. (Previously Presented) The computer readable medium of claim 31, wherein the existing role entry has a role filter condition, and the role membership condition comprises one or more attributes of a candidate user entry meeting the role filter condition.

36. (Original) The computer readable medium of claim 35, wherein the existing role entry has an attribute designating the role filter condition.

37. (Cancelled)

38. (Cancelled)

39. (Previously Presented) The computer readable medium of claim 31, wherein the extra scope is defined as a subtree of the designated location.

40. (Currently Amended) The computer readable medium of claim 31, wherein the first predefined rule comprises defining the existing role entry's associated scope as a subtree of a parent of the existing role entry in the tree structure.

41. (Previously Presented) The computer readable medium of claim 31, further comprising instructions for:

    d) responding to a request of whether a designated user entry has a given role by:

        d1) identifying a corresponding role entry corresponding to the given role;

        d2) determining whether the designated user entry meets the first condition in relation to the corresponding role entry;

d3) if the designated user entry does not meet the first condition in relation to the corresponding role entry, determining whether the corresponding role entry has extra role data identifying an extra scope; and

d4) if the corresponding role entry has extra role data, determining whether the designated user entry meets the second condition in relation to the corresponding role entry.

42. (Previously Presented) The computer readable medium of claim 31, further comprising instructions for:

d) responding to a request for any user entries having a given role by:

d1) identifying a corresponding role entry corresponding to the given role;

d2) scanning the tree to identify any user entries meeting the first condition in relation to the corresponding role entry; and

d3) if the corresponding role entry has extra role data identifying an extra scope, scanning the tree to identify any user entries meeting the second condition in relation to the corresponding role entry.

43. (Previously Presented) The computer readable medium of claim 31, further comprising instructions for:

d) responding to a request for roles of a given user entry by:

d1) identifying a candidate role entry;

d2) determining whether the given user entry meets the first condition in relation to the candidate role entry;

d3) if the given user entry does not meet the first condition in relation to the candidate role entry and the candidate role entry has extra role data identifying an extra scope, determining whether the given user entry meets the second condition in relation to the candidate role entry; and

d4) repeating said d1) through said d3) with other candidate role entries until an end condition is met.

44. (Previously Presented) The computer readable medium of claim 43, wherein the end condition comprises having performed said d1) through said d3) with substantially all the applicable candidate role entries.

45. (Previously Presented) The computer readable medium of claim 43, wherein the given user entry belongs to a subtree of a top suffix of the tree structure, said d2) is performed for each role entry belonging to the subtree of said top suffix, and said d3) is performed for each role entry belonging to any subtree of any top suffix of the tree structure.